Section 9

Essential Fish Habitat

In addition to the ESA, the actions under this Seattle Biological are subject to the Magnuson-Stevens Fishery Conservation and Management Act (MSA). This section describes the Essential Fish Habitat issues for the Seattle Biological Evaluation.

9.1 Essential Fish Habitat

The MSA established procedures to preserve Essential Fish Habitat for species regulated under a federal fisheries management plan. Federal agencies such as the Corps are required under the MSA to consult with NMFS regarding actions that are authorized, funded, or undertaken by that agency that may adversely affect Essential Fish Habitat. This includes the Corps-permitted activities covered by the Seattle Biological Evaluation.

Essential Fish Habitat means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting this definition the following terms apply:

- 'Waters' include aquatic areas and their associated physical, chemical, and biological properties fish use. Waters may include aquatic areas historically used by fish where appropriate.
- 'Substrate' includes sediment, hard bottom, structures underlying the waters, and associated biological communities
- 'Necessary' means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem
- 'Spawning, breeding, feeding, or growth to maturity' covers a species' full life-cycle (50 CFR 600.110).
- 'Adverse effect' means any impact that reduces quality and/or quantity of Essential Fish Habitat, and may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey or reduction in species fecundity), site-

specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

Any reasonable attempt to encourage the conservation of Essential Fish Habitat must take into account actions that occur outside that habitat such as upstream and upslope activities that may have an adverse effect on Essential Fish Habitat. Therefore, Essential Fish Habitat consultation with NMFS is required for any federal agency action that may adversely affect Essential Fish Habitat, regardless of its location.

The procedures identified under the MSA are designed to identify, conserve, and enhance Essential Fish Habitat. Under the MSA federal agencies must follow this process:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (section 305(b)(2))
- NMFS must provide conservation recommendations for any federal or state activity that may adversely affect Essential Fish Habitat (section 305(b)(4)(A))

Federal agencies must provide a detailed response in writing to NMFS within 30 days after receiving Essential Fish Habitat conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on Essential Fish Habitat. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the federal agency shall explain its reasons for not following the recommendations (section 305(b)(4)(B)).

9.2 Identification of Essential Fish Habitat

Under the MSA, the Pacific Fisheries Management Council (PFMC) has designated Essential Fish Habitat for federally-managed fisheries within the waters of Washington, Oregon, and California.

Designated Essential Fish Habitat for groundfish and coastal pelagic species encompasses all waters along the coasts of Washington, Oregon, and California that are seaward from the MHW line, including the upriver extent of saltwater intrusion in river mouths to the boundary of the U. S. economic zone approximately 230 miles (370.4 km) offshore (PFMC 1998a,b).

Freshwater Essential Fish Habitat for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible, to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable human-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years) (PFMC 1999).

In estuarine and marine areas, designated salmon Essential Fish Habitat extends from the nearshore and tidal submerged environments within state territorial waters out to the full

extent of the exclusive economic zone offshore of Washington, Oregon, and California, north of Point Conception to the Canadian border (PFMC 1999).

Detailed description and identification of Essential Fish Habitat are contained in the fishery management plans for groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and Pacific salmon (PFMC 1999).

9.3 Proposed Actions

The proposed action and action areas are described in **Section 3, Description of the Proposed Action: Methods**, and **Section 6, Environmental Baseline**, of this Seattle Biological Evaluation. The action areas include habitats that have been designated as Essential Fish Habitat for various life-history stages of 46 species of groundfish, 4 species of coastal pelagic species, and 3 species of Pacific salmon (Table 9-1).

Given the programmatic intent of this Seattle Biological Evaluation, the proposed action includes routine projects within the City of Seattle's Capital Improvement Program (CIP) projects and Maintenance Programs. The projects and programs can be divided into 14 categories called methods for the purposes of this document:

1. Delineation of work areas and project startup
2. Clearing, grubbing, grading and placement of temporary fill
3. Temporary dewatering of an upland construction site
4. Work area isolation and fish removal in streams, large waterbodies and for pipe bypass
5. Pipe and culvert installation, replacement and maintenance
6. Vactoring, jetting and excavating accumulated sediments
7. Bank stabilization
8. Habitat addition and maintenance
9. Trench safety/support systems
10. Beach nourishment and substrate addition
11. Boat launch improvement, repair and maintenance
12. In-water/overwater structure repair and replacement
13. Site restoration
14. Landscaping and planting.

Table 9-1
Fish species with designated Essential Fish Habitat in the Seattle action areas

Groundfish Species		
redstripe rockfish *S. proriger*	Dover sole *Microstomus pacificus*	spiny dogfish *Squalus acanthias*
rosethorn rockfish *S. helvomaculatus*	English sole *Parophrys vetulus*	big skate *Raja binoculata*
rosy rockfish *S. rosaceus*	flathead sole *Hippoglossoides elassodon*	California skate *Raja inornata*
rougheye rockfish *S. aleutianus*	petrale sole *Eopsetta jordani*	longnose skate *Raja rhina*
ratfish *Hydrolagus colliei*	sharpchin rockfish *S. zacentrus*	rex sole *Glyptocephalus zachirus*
Pacific cod *Gadus macrocephalus*	splitnose rockfish *S. diploproa*	rock sole *Lepidopsetta bilineata*
Pacific whiting (hake) *Merluccius productus*	striptail rockfish *S. saxicola*	sand sole *Psettichthys melanostictus*
black rockfish *Sebastes melanops*	tiger rockfish *S. nigrocinctus*	starry flounder *Platichthys stellatus*
bocaccio *S. paucispinis*	bermilion rockfish *S. miniatus*	arrowtooth flounder *Atheresthes stomias*
yelloweye rockfish *S. ruberrimus*	brown rockfish *S. auriculatus*	yellowtail rockfish *S. flavidus*
canary rockfish *S. pinniger*	shortspine thornyhead *Sebastolobus alascanus*	China rockfish *S. nebulosus*
cabezon *Scorpaenichthys marmoratus*	copper rockfish *S. caurinus*	lingcod *Ophiodon elongates*
darkblotch rockfish *S. crameri*	kelp greenling *Hexagrammos decagrammus*	greenstriped rockfish *S. elongates*
sablefish *Anoplopoma fimbria*	Pacific ocean perch *S. alutus*	Pacific sanddab *Citharichthys sordidus*
quillback rockfish *S. maliger*	butter sole *Isopsetta isolepis*	redbanded rockfish *S. babcocki*
curlfin sole *Pleuronichthys decurrens*		
Coastal Pelagic Species		
anchovy *Engraulis mordax*	Pacific sardine *Sardinops sagax*	Pacific mackerel *Scomber japonicus*
market squid *Loligo opalescens*		
Pacific Salmon Species		
Chinook salmon *Oncorhynchus tshawytscha*	coho salmon *O. kisutch*	Puget Sound pink salmon *O. gorbuscha*

9.4 Effects of Proposed Actions

As described in detail in **Section 7, Effects of the Action**, the proposed actions may result in the following detrimental short- and long-term effects to a variety of habitat parameters:

- Fish mortality, injury and/or behavioral changes resulting from pile driving activities.
- Changes in saltwater and freshwater shallow water habitat associated with shoreline hardening. This can result in permanent loss of habitat, reduced availability and extent of foraging, spawning, and refuge areas, loss of complex habitat, and altered hydrology.
- Temporary impacts associated with increased turbidity and suspended solid concentrations associated with construction activities. Increased turbidity and suspended solids can result in decreased feeding efficiency, reduced growth, increased predation, and decreased habitat availability.
- Injury and mortality associated with capture and handling of fish during stream dewatering activities, including electrofishing.
- Sharp underwater light contrasts during the day and night as a result of overwater structures and artificial lighting surrounding piers and overwater structures, affecting predator-prey relationships, behaviors, migration, spawning, rearing, and refugia.
- Temporary suspension and a long-term increase in creosote-contaminated sediments due to the removal of creosote-treated timber piles, resulting in reduced reproductive success and reduced survival.

9.5 Essential Fish Habitat Conservation Measures

The activities addressed in this Seattle Biological Evaluation are relatively simple capital projects or maintenance that will apply conservation measures that feature best management practice for the following:

- Approved work/timing restrictions for ESA-listed species
- Stormwater pollution prevention
- Work area isolation
- Fish handling
- Overwater structure size
- Piling installation and noise abatement
- Shoreline and aquatic habitat protection
- Pesticides.

The overall intent of the Seattle Biological Evaluation is to match 14 construction methods with 75 conservation measures designed to minimize environmental impacts to ESA-listed species and their habitat. In certain cases, the work done under this document is designed to minimize impacts to and to maximize the quality and quantity of fish habitat. The methods are identified in **Section 3, Description of Proposed Action: Methods**, where they are linked to specific conservation measures. The conservation measures are detailed separately in **Section 4, Conservation Measures**. These measures, which all minimize impacts to Essential Fish Habitat, will be implemented during project activities covered by the Seattle Biological Evaluation.

Table 9-2 is a quick reference guide to where Essential Fish Habitat is found within the Seattle action areas.

Table 9-2
Quick reference for Essential Fish Habitat species within the Seattle action areas and selected watersheds

Action area	Species		
	Groundfish	Coastal pelagic	Pacific salmon
Elliott Bay	X	X	X
Ship Canal			(Chinook and Coho only)*
Lower Green/Duwamish			(Chinook and Coho only)*
North Seattle/Puget Sound	X	X	
North Lake Washington Thornton Creek			(Chinook and Coho only)*
South Lake Washington			(Chinook and Coho only)*
South Seattle/Puget Sound	X	X	X
Source: NMFS			

*Of the 3 Pacific salmon species covered under Essential Fish Habitat, only Chinook and coho salmon are found within these action areas and need to be analyzed.